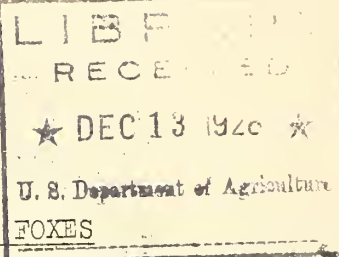


## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



United States Department of Agriculture  
Bureau of Biological Survey



A COMPARISON OF FEED COSTS WITH PELT VALUES OF SILVER FOXES

By Frank G. Ashbrook and Karl B. Hanson  
Division of Fur Resources

Are we headed for overproduction of silver-fox pelts, or will increased demand along with a normal population increase take care of a larger production year after year? This is a question that many fox farmers ask themselves and others during a year of low prices for pelts. The situation causes a restless condition among fox farmers but it is more alarming to the small than to the large producer. The reason is that costs of equipment, feed, and labor are greater on a small fox farm than on a large one. Prices received for pelts are regulated by supply and demand, and the organizations representing fox farmers are not in position to control the supply, and thereby aid in maintaining present price levels or in increasing them.

Admitting, however, that silver-fox pelts have declined in price and that the cost of meat and meat products fed to foxes is on the increase, it is possible for every fox farmer to investigate the cost of production with a view to economizing in feeding operations. This requires some study, and the findings may show that a revision of the system is necessary to reduce the overhead and widen the margin of profit. Each producer may compare his feed costs during the past year with those given below:

Feed Costs at the U. S. Fur-Animal Experiment Station During  
the Year 1928. (f.o.b.) Saratoga Springs, N. Y.

: Cost per 100 pounds:			: Cost per 100 pounds		
Kinds of feed	High	Low	Kinds of feed	High	Low
Beef hearts .....	\$ 13.00	\$ 11.00	Perfection fox:		
Beef liver .....	11.00	11.00	feed .....	\$ 7.65	\$ 6.65
Beef tripe .....	8.00	8.00	Corn oil-cake :		
Beef milts .....	6.00	6.00	meal .....	2.71	2.39
Back steaks .....	8.00	8.00	Wheat-germ ...:	3.45	3.35
Beef lungs .....	4.00	4.00	Shredded-wheat:		
Pork liver .....	6.00	5.00	waste .....	5.85	5.85
Pork milts .....	6.00	6.00	Fishmeal .....	4.13	4.13
Milk .....	5.50	4.00	Edible bonemeal:	4.50	4.00
Cod-liver oil ...:	20.50	20.50	Alfalfa meal ..:	2.55	2.55
Bread, kiln-dried.:	3.50	3.50	Iodized salt...:	5.20	5.20

No meat animals were slaughtered on the farm, and no other food was produced there. Fox farmers operating on a scale large enough to warrant purchasing meat animals alive and slaughtering them on the farm can no doubt reduce the cost of meat and meat products fed to foxes.

Note:--- This leaflet, covering the feeding of pups and adult foxes of both sexes, supersedes mimeographed leaflet Bi-972, "Feeding Vixens and Pups," issued in June, 1928.

With feed prices as quoted, and following certain definite systems of feeding, it cost approximately \$42 a year to feed a pair of foxes and two pups. The quantity of food consumed by a vixen during one year in addition to that eaten by 4 pups until eight weeks of age cost \$15. The feed for a fox pup from weaning age (8 weeks) to January amounted to \$8. The feed for a pair of non-producing foxes cost \$25. These costs are not an extreme minimum, but will serve for purposes of comparison.

### System of Feeding

The meat portion of the ration consisted of the meats listed in the table. Tripe and beef lungs are used mainly during that time of year when foxes are fed only a maintenance ration, and not during the breeding and whelping periods. Liver, if used alone, is fed only once a week, but when given more frequently is mixed with 3 or 4 times its weight of beef hearts. A mixture of these meats should be fed daily, but if only one kind is given at a time it should be changed at frequent intervals. All meat should be ground before it is fed. This facilitates better mixing with the other ingredients of the ration and helps to discourage the foxes from picking out the meat or burying the feed.

The following mixture is used in all rations:

<u>Ingredients</u>	<u>Pounds</u>
Bread, kiln-dried (ground before mixing) ...	100
Shredded-wheat waste .....	100
Wheat-germ meal .....	100
Corn oil-cake meal (corn-germ) .....	100
Corn-flake waste, 75 per cent; and meat and bone-meal, 25 per cent .....	100
Fish meal .....	50
Edible bone meal .....	50
Alfalfa meal .....	25
Iodized salt .....	5
Total .....	630

Besides cereals, this mixture also contains dried-meat products or concentrated meat substitutes, as well as substances high in essential minerals. For the sake of convenience, a 630-pound supply of this so-called cereal mixture is prepared at a time and stored in vermin-proof bins, and such quantities are taken at each meal as required.

Other ingredients of the rations, besides ground fresh meat and the cereal mixture, are one or more of the following: Milk, water, and cod-liver oil. After proper quantities of the different ingredients of a ration have been weighed, they are thoroughly mixed by stirring and the mixture promptly fed.

In reading and studying the rations and quantities of feed given each fox at various stages of development, it is to be remembered that the information presented is meant to serve as a guide and not as a hard and fast rule to be followed without the exercise of judgement.

A ration once daily of meat, 32 per cent; cereal mixture, 16 per cent; milk, 32 per cent; water, 16 per cent; and cod-liver oil, 4 per cent, is fed to male foxes from January 1 through the mating season and to female foxes from January 1 until one week after whelping. On January 1 the foxes are started on a light feed of approximately 0.6 of a pound a fox a day, to avoid excessive fatness at mating time. From January 16 to 31 the feed is gradually increased to increase weight, thereby flushing the females to bring them in heat more uniformly. The feed of the mated pairs is reduced to 0.5 of a pound a fox a day the first two or three days after mating takes place and then gradually increased to 0.8 of a pound.

Male foxes after the mating season and females after they have weaned the young are fed once daily a ration of meat, 25 per cent; milk, 12-1/2 per cent; and water, 37-1/2 per cent. The males are given this ration as soon as practicable after mating and are fed on the average of about 0.75 of a pound a day to the end of August. A slight increase to 0.8 of a pound is made from September 1 to 30, and another to 0.85 of a pound from October 1 to November 15. A gradual reduction then takes place and the foxes are given 0.7 of a pound from November 16 to December 31. Females not carrying young, those losing their litter, and those that have weaned the pups also are fed this ration in the exact quantities specified for male foxes.

Female foxes and their pups are fed twice daily, commencing the second week after birth. The morning feed consists of milk, 75 per cent; and cereal mixture, 25 per cent. The vixen and her pups are given 0.35 of a pound the second week, 0.47 the third week, 0.55 the fourth week, 0.7 the fifth week, 0.8 the sixth week, and 0.9 of a pound the seventh week. These weights will vary with the number of pups and the appetite of the female.

The evening feed consists of meat, 47 per cent; cereal mixture, 23.6 per cent; milk, 23.6 per cent; and cod-liver oil, 5.8 per cent. The vixen and pups are fed this ration as follows: Second week, 0.45 of a pound; third week, 0.54; fourth week, 0.75; fifth week, 0.8; sixth week, 0.9; and seventh week, 0.95 of a pound.

The pups are generally weaned at two months of age, depending, of course, on their growth and development. They are fed twice daily after weaning, and the morning ration is the same as that given before weaning. Two-months-old pups are generally started on a morning feed of about 0.3 of a pound; at two and one-half months, 0.35 of a pound; at three months, 0.37; and at four months, 0.4 of a pound. The evening meal consists of meat, 50 per cent; cereal mixture, 25 per cent; and milk, 25 per cent. The pups are started off with 0.38 of a pound; at two and one-half months, 0.45; at three months, 0.5; and at four months, 0.5 of a pound.



About September 1 the ration for pups is changed, and they are fed once a day instead of twice. The new ration consists of equal proportions of meat, cereal mixture, milk, and water. From September 1 to 30 each pup receives a daily feeding of about 0.85 of a pound; October 1 to November 30, about 0.95 of a pound; and from December 1 to 31, the feed is slightly reduced to 0.75 of a pound to prevent the pups from becoming too fat at breeding time.

To illustrate the foregoing, let us take the feeding of 100 fox pups during the month of September. As each pup is to receive approximately 0.85 of a pound of feed a day, 100 pups would require 100 times this weight, or 85 pounds. As this is to consist of meat, cereal mixture, milk, and water in equal parts, there would be  $21\frac{1}{4}$  pounds of each (25 per cent, or  $\frac{1}{4}$  of 85 pounds).

The meat is ground and mixed with the cereal mixture, to which milk and water are added. This mixture is now ready to be fed. The feed given to each fox once daily is not weighed, but the total quantity is divided among the 100 foxes. At the beginning it is best to place approximately the same quantity of feed in each pan until the caretaker becomes acquainted with the appetites and the likes and dislikes of all the foxes. As before stated, each fox should clean up its feed in a very short time.

#####

Bi-990  
Mar. '30

United States Department of Agriculture  
Bureau of Biological Survey

RECEIVED  
MAR 25 1930  
U. S. Department of Agriculture

A COMPARISON OF FEED COSTS WITH PELT VALUES OF SILVER-FOXES

By Frank G. Ashbrook and Karl B. Hanson  
Division of Fur Resources

Are we headed for overproduction of silver-fox pelts, or will increased demand along with a normal population increase take care of a larger production year after year? This is a question that many fox farmers ask themselves and others during a year of low prices for pelts. The situation causes a restless condition among fox farmers, but it is more alarming to the small than to the large producer. The reason is that costs of equipment, feed, and labor are greater on a small fox farm than on a large one. Prices received for pelts are regulated by supply and demand, and the organizations representing fox farmers are not in position to control the supply, and thereby aid in maintaining present price levels or in increasing them.

Admitting, however, that silver-fox pelts have declined in price and that the cost of meat and meat products fed to foxes is on the increase, it is possible for every fox farmer to investigate the cost of production with a view to economizing in feeding operations. This requires some study, and the findings may show that a revision of the system is necessary to reduce the overhead and widen the margin of profit. Each producer may compare his feed costs during the past year with those given below:

Feed Costs at the U. S. Fur-Animal Experiment Station during the  
Year 1929 (f.o.b.) Saratoga Springs, N. Y.

Kinds of feed	Cost per 100 pounds		Kinds of feed	Cost per 100 pounds	
	High	Low		High	Low
Beef hearts .....	\$13.00	\$11.00	Cornflake waste	\$3.00	\$3.00
Beef liver .....	11.00	11.00	Meat and bone-		
Beef tripe .....	8.00	8.00	scrap .....	4.50	3.35
Beef milts .....	6.00	6.00	Corn oil-cake		
Back steaks .....	8.00	8.00	meal .....	2.71	2.39
Beef lungs .....	4.00	4.00	Wheat-germ .....	3.45	3.35
Pork liver .....	6.00	5.00	Shredded-wheat		
Pork milts .....	6.00	6.00	waste.....	5.85	5.85
Milk.....	5.50	4.00	Fishmeal.....	4.13	4.13
Cod-liver oil....	20.50	20.50	Edible bonemeal	4.50	4.00
Bread, kiln-dried	3.50	3.50	Alfalfa meal	2.55	2.55
			Iodized salt	5.20	5.20

No meat animals were slaughtered on the farm, and no other food was produced there. Fox farmers operating on a scale large enough to warrant purchasing meat animals alive and slaughtering them on the farm can no doubt reduce the cost of meat and meat products fed to foxes.

With feed prices as quoted, and following certain definite systems of feeding, it cost approximately \$42 a year to feed a pair of foxes and two pups. The quantity of food consumed by a vixen during one year in addition to that eaten by 4 pups until eight weeks of age cost \$15. The feed for a fox pup from weaning age (8 weeks) to January amounted to \$8. The feed for a pair of non-producing foxes cost \$25. These costs are not an extreme minimum, but will serve for purposes of comparison.

### System of Feeding

The meat portion of the ration consisted of the meats listed in the table. Tripe and beef lungs are used mainly during that time of year when foxes are fed only a maintenance ration, and not during the breeding and whelping periods. Liver, if used alone, is fed only once a week, but when given more frequently is mixed with 3 or 4 times its weight of beef hearts. A mixture of these meats should be fed daily, but if only one kind is given at a time it should be changed at frequent intervals. All meat should be ground before it is fed. This facilitates better mixing with the other ingredients of the ration and helps to discourage the foxes from picking out the meat or burying the feed.

The following mixture is used in all rations:

<u>Ingredients</u>	<u>Pounds</u>
Bread, kiln-dried (ground before mixing), or	
rice-flake waste .....	100
Shredded-wheat waste .....	100
Wheat-germ meal .....	100
Corn oil-cake meal (corn-germ) .....	100
Corn-flake waste.....	100
Meat and bone scraps .....	33
Fish meal .....	50
Edible bone meal .....	50
Alfalfa meal .....	25
Iodized salt .....	5
Total ...	633

Besides cereals it will be noticed that the mixture also contains dried-meat products or protein concentrates, as well as substances high in essential minerals. For the sake of convenience, a 663-pound supply of this so-called cereal mixture is prepared at a time and stored in vermin-proof bins, and such quantities are taken at each meal as required.

Other ingredients of the rations, besides ground fresh meat and the cereal mixture, are one or more of the following: Milk, vegetables, water, and cod-liver oil. The vegetables, such as lettuce, cabbage, oat-sprouts, tomatoes, carrots, and spinach, like the meat, are ground before feeding. After proper quantities of the different ingredients of a ration have been weighed, they are thoroughly mixed by stirring and the mixture promptly fed. None of the ingredients mentioned requires cooking.



In reading and studying the rations and quantities of feed given each fox at various stages of development, it is to be remembered that the information presented is meant to serve as a guide and not as a hard and fast rule to be followed without the exercise of judgment.

A daily morning feeding of about 1/4 ounce of raisins for each fox and an evening feeding of meat, 50 per cent; cereal mixture, 15 per cent; milk 30 per cent; vegetable, 4 per cent; and cod-liver oil, 1 per cent, are fed to male foxes from January 1 through the mating season and to female foxes from January 1 until one week after whelping. On January 1 the foxes are started on a light feed of approximately 0.6 of a pound a fox a day, to avoid excessive fatness at mating time. From January 16 to 31 the feed is gradually increased to nearly full feed. The feed of the mated pairs is reduced to 0.5 of a pound a fox a day the first two or three days after mating takes place and then gradually increased to 0.8 of a pound, or to such quantities as each vixen will heartily consume each day.

Male foxes after the mating season and females after they have weaned the young are fed once daily a ration of meat, 25 per cent; cereal mixture, 25 per cent; milk, 15 per cent; vegetable, 5 per cent; and water, 30 per cent. The males are given this ration as soon as practicable after mating and are fed on an average of about 0.75 of a pound a day to the end of August. A slight increase to 0.8 of a pound is fed during September, and another to 0.85 of a pound during October. Females not carrying young, those losing their litter, and those that have weaned the pups also are fed this ration in the same quantities specified for the males. Foxes to be pelted are kept on this ration until pelting time and fed an average of 0.75 to 0.8 pound a day throughout the fall months.

During November and December the foxes to be kept over for breeding purposes are fed a ration of meat, 45 per cent; cereal mixture, 25 per cent; milk, 25 per cent; and vegetables, 5 per cent. Throughout November and December the females and pups should be allowed to take on considerable weight; hence, it is advisable that they be given as much feed each day as they will heartily consume. Precautions should be taken, however, to keep the adult males from becoming too fat.

The lactating females and their pups are fed twice daily, commencing a week after birth. The morning feed consists of milk, 75 per cent; and cereal mixture, 25 per cent. The vixen and her pups are given 0.35 pound the second week, 0.47 the third week, 0.55 the fourth week, 0.7 the fifth week, 0.8 the sixth week, and 0.9 of a pound the seventh week. These weights will vary with the number of pups and the appetite of the female.

The evening feed consists of meat, 49 per cent; cereal mixture, 20 per cent; milk 25 per cent; vegetables, 5 per cent; and cod-liver oil, 1 per cent. The vixen and pups are fed this ration as follows: Second week, 0.45 of a pound; third week, 0.54; fourth week, 0.75; fifth week, 0.8; sixth week, 0.9; and seventh week, 0.95 of a pound.

The pups are generally weaned at two months of age, depending, of course, on their growth and development. They are fed twice daily after weaning, and the morning ration is the same as that given before weaning. Two-months-old

pups are generally started on a morning feed of about 0.3 of a pound; at two and one-half months, 0.35 of a pound; at three months, 0.37; and at four month , 0.4 of a pound. The evening meal consists of meat, 50 per cent; cereal mixture, 20 per cent; vegetables, 5 per cent; and milk, 25 per cent. The pups are started off with 0.38 of a pound; at two and one-half months, 0.45; at three months, 0.5; and at four months, 0.5 of a pound.

On September 1 the pups are placed on the same ration as the adult foxes. From September 1 to 30 each pup receives a daily feeding of about 0.85 of a pound; October 1 to October 31, about 0.95 of a pound.

To illustrate the foregoing, let us take one day's feeding of 100 pups during the month of September. Since each pup is to receive approximately 0.85 of a pound of feed a day, 100 pups would require 100 times this weight, or 85 pounds. As the mixture is to consist of meat, 25 per cent; cereal mixture, 25 per cent; milk, 15 per cent; vegetables, 5 per cent; and water 30 per cent, there would be required  $21\frac{1}{4}$  pounds of meat,  $21\frac{1}{4}$  pounds of cereal mixture,  $12\frac{3}{4}$  pounds of milk,  $4\frac{1}{4}$  pounds of vegetables, and  $25\frac{1}{2}$  pounds of water.

The meat is ground and mixed with the cereal mixture, to which milk and water are added. This mixture is now ready to be fed. The feed given to each fox once daily is not weighed, but the total quantity is divided among the 100 foxes. At the beginning it is best to place approximately the same quantity of feed in each pan until the caretaker becomes acquainted with the appetites and the likes and dislikes of all the foxes. As before stated, each fox should clean up its feed in a very short time.

#####